

FILE 'HCAPLUS' ENTERED AT 13:37:54 ON 01 JUL 2009

L1 196846 S STARCH OR AMYLOSE OR AMYLOPECTIN
L2 1292 S (BRANCHING ENZYME)
L3 0 S DEGREE OF BRANCHING
L4 2335 S DEGREE OF BRANCHING
L5 9 S L1 AND L2 AND L4
L6 485 S BRANCHING DEGREE
L7 4 S L1 AND L2 AND L6
L8 13 S L5 OR L7

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=> file hcaplus  
COST IN U.S. DOLLARS  
SINCE FILE TOTAL  
ENTRY SESSION  
FULL ESTIMATED COST 0.22 0.22
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FILE 'HCAPLUS' ENTERED AT 13:37:54 ON 01 JUL 2009
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REVISED CLASS FIELDS (/NCL) LAST RELOADED: Apr 2009
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Apr 2009

HCAplus now includes complete International Patent Classification (IPC) reclassification data for the second quarter of 2009.

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<http://www.cas.org/legal/infopolicy.html>

This file contains CAS Registry Numbers for easy and accurate substance identification.

```
=> s starch or amylose or amylopectin  
    190503 STARCH  
    14090 AMYLOSE  
    7522 AMYLOPECTIN  
L1      196846 STARCH OR AMYLOSE OR AMYLOPECTIN
```

```
=> s (branching enzyme)  
    62224 BRANCHING  
    897716 ENZYME  
L2      1292 (BRANCHING ENZYME)  
                  (BRANCHING(W) ENZYME)
```

```
=> s degree of brnaching  
    4599211 DEGREE  
    3 BRNACHING  
L3      0 DEGREE OF BRNACHING  
                  (DEGREE(1W) BRNACHING)
```

```
=> s degree of branching  
    4599211 DEGREE  
    62224 BRANCHING  
L4      2335 DEGREE OF BRANCHING  
                  (DEGREE(1W) BRANCHING)
```

=> s 11 and 12 and 14

L5 9 L1 AND L2 AND L4

=> s branching degree
62224 BRANCHING
4599211 DEGREE
L6 485 BRANCHING DEGREE
(BRANCHING (W) DEGREE)

=> s l1 and l2 and l6
L7 4 L1 AND L2 AND L6

=> s l5 or l7
L8 13 L5 OR L7

=> d 18 1-13 ti abs bib hitstr

L8 ANSWER 1 OF 13 HCAPLUS COPYRIGHT 2009 ACS on STN
TI Synthesis of branched poly-glucans by the tandem action of potato phosphorylase and *Deinococcus geothermalis* glycogen branching enzyme
AB An enzymic tandem reaction is described in which the enzymes phosphorylase and *Deinococcus geothermalis* glycogen branching enzyme (Dg GBE) catalyze the synthesis of branched polyglucans from glucose-1-phosphate (G-1-P). Phosphorylase consumes G-1-P and polymerizes linear amylose while Dg GBE introduces branching points on the α -(1 \rightarrow 6) positions by reshuffling short oligosaccharides. The resulting branched polyglucans have an unusually high degree of branching of 11%.
AN 2008:1008302 HCAPLUS <<LOGINID::20090701>>
DN 149:426162
TI Synthesis of branched poly-glucans by the tandem action of potato phosphorylase and *Deinococcus geothermalis* glycogen branching enzyme
AU van der Vlist, Jeroen; Reixach, Marta Palomo; van der Maarel, Marc; Dijkhuizen, Lubbert; Schouten, Arend Jan; Loos, Katja
CS Department of Polymer Chemistry, Zernike Institute for Advanced Materials, University of Groningen, Groningen, 9747 AG, Neth.
SO Macromolecular Rapid Communications (2008), 29(15), 1293-1297
CODEN: MRCOE3; ISSN: 1022-1336
PB Wiley-VCH Verlag GmbH & Co. KGaA
DT Journal
LA English
OS CASREACT 149:426162
RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 2 OF 13 HCAPLUS COPYRIGHT 2009 ACS on STN
TI Novel slowly digestible storage carbohydrate
AB Slowly digestible storage carbohydrates (starch, glycogen) have a branching degree \geq 8.5% and a side chain composition comprising \geq 10% of d.p. 5-7. The slowly digestible carbohydrates can be produced by treating the substrate (glycogen, starch) from a native source with a glycogen-branched enzyme derived from *Rhodothermus obamensis*, *Rhodothermus marinus*, *Deinococcus radiodurans*, or *Deinococcus geothermalis*.

AN 2008:852226 HCAPLUS <<LOGINID::20090701>>
DN 149:127274
TI Novel slowly digestible storage carbohydrate
IN Van der Maarel, Marc Jos Elise Cornelis; Binnema, Doede Jacob; Semeijn, Cindy; Buwalda, Pieter Lykle
PA Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek

Tno, Neth.
 SO Eur. Pat. Appl., 20pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1943908	A1	20080716	EP 2006-77345	20061229
	R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, MK, RS				
	WO 2008082298	A2	20080710	WO 2007-NL50708	20071228
	WO 2008082298	A3	20080821		
	W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA				

PRAI EP 2006-77345 A 20061229

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 3 OF 13 HCAPLUS COPYRIGHT 2009 ACS on STN
 TI Novel slowly digestible storage carbohydrate
 AB Slowly digestible storage carbohydrates (starch, glycogen) have a branching degree $\geq 8.5\%$ and a side chain composition comprising $\geq 10\%$ of d.p. 5-7. The slowly digestible carbohydrates can be produced by treating the substrate (glycogen, starch) from a native source with a glycogen-branching enzyme derived from *Rhodothermus obamensis*, *Rhodothermus marinus*, *Deinococcus radiodurans*, or *Deinococcus geothermalis*.
 AN 2008:824836 HCAPLUS <>LOGINID::20090701>>
 DN 149:127270
 TI Novel slowly digestible storage carbohydrate
 IN Van der Maarel, Marc Jos Elise Cornelis; Binnema, Doede Jacob; Semeijn, Cindy; Buwalda, Pieter Lykle; Sanders, Peter
 PA Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO, Neth.
 SO PCT Int. Appl., 28pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2008082298	A2	20080710	WO 2007-NL50708	20071228
	WO 2008082298	A3	20080821		
	W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM,				

TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW,
GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA
EP 1943908 A1 20080716 EP 2006-77345 20061229
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL,
BA, HR, MK, RS
PRAI EP 2006-77345 A 20061229

L8 ANSWER 4 OF 13 HCPLUS COPYRIGHT 2009 ACS on STN
TI Expression of Escherichia coli branching enzyme in caryopsis of transgenic rice results in amylopectin with an increased degree of branching
AB Physiochem. properties of starch are dependent on several factors including the relative abundance of amylose and amylopectin, and the degree of branching of amylopectin. Utilizing Agrobacterium-mediated transformation, a construct containing the coding region of branching enzyme of Escherichia coli, under transcriptional control of the rice (*Oryza sativa L.*) starch-branched enzyme promoter was introduced into rice cv. Nakdong. To enhance *glgB* expression, the first intron of rice starch-branched enzyme and the matrix attachment region (MAR) sequence from chicken lysozyme were included in the expression vector. Eleven independent transgenic rice plants were generated. Southern blot anal. indicated that the copy number of *glgB* integrated into transgenic rice varied from one to five. High-performance liquid chromatog. anal. of starch from transgenic lines revealed that amylopectin from transgenic lines exhibited greater branching than that of non-transgenic rice. The A/B1 ratio in amylopectin increased from 1.3 to 2.3 and the total branching ratio, A+B1/B-rest, increased from 6 to 12 in transgenic rice. The observed increase in the short-chain fractions with a d.p. between 6 and 10 is expected to have a significant effect on retrogradation. Our study demonstrates that amylopectin branching can be altered in vivo, thus changing the physicochem. properties of starch.
AN 2005:180917 HCPLUS <>LOGINID::20090701>>
DN 142:478866
TI Expression of Escherichia coli branching enzyme in caryopsis of transgenic rice results in amylopectin with an increased degree of branching
AU Kim, Won-Seok; Kim, Jukon; Krishnan, Hari B.; Nahm, Baek Hie
CS Department of Bioscience and Bioinformatics, Myongji University, Yongin, 449-728, S. Korea
SO Planta (2005), 220(5), 689-695
CODEN: PLANAB; ISSN: 0032-0935
PB Springer GmbH
DT Journal
LA English
RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 5 OF 13 HCPLUS COPYRIGHT 2009 ACS on STN
TI Controlling the change of starch storage in plants by transfection of starch synthesis-related genes
AB The method comprises constructing chimeric gene of starch synthesis-related gene, and then transforming into starch-storing vegetable (such as paddy, corn, wheat, rye, barley, oat, sweet potato, potato, or their cells or tissues). The chimeric gene contains

successively a promoter (such as constitutive promoter, tissue-specific promoter, organ-specific promoter, inducible promoter, or compound promoter and regulatory element, preferably promoter of protein GluA-1), starch synthesis-related gene (such as rice starch branching enzyme 1, rice starch branching enzyme 3, rice soluble starch synthase, or rice starch debranching enzyme), and a terminator. The change in the content of amylose and amylopectin or in the branching degree of starch may be controlled by the invented method.

AN 2003:861189 HCAPLUS <<LOGINID::20090701>>

DN 140:230504

TI Controlling the change of starch storage in plants by transfection of starch synthesis-related genes

IN Zhu, Zhen; Xu, Junwang

PA Institute of Genetics, Chinese Academy of Sciences, Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 42 pp.

CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI CN 1384197	A	20021211	CN 2001-115823	20010508
PRAI CN 2001-115823		20010508		

L8 ANSWER 6 OF 13 HCAPLUS COPYRIGHT 2009 ACS on STN

TI Characterisation of the in vitro products of potato starch branching enzymes I and II

AB An enzyme substrate obtained by ethanol fractionation of linear dextrins was branched by potato starch branching enzymes (SBE). During the branching process, samples were withdrawn from the incubation mixture and the chain length distributions were analyzed by high performance anion exchange chromatog. (HPAEC). The relative composition of chains with a degree of polymerization of 9-35 was essentially constant throughout the branching process

for both SBEI and SBEII. This showed that the change in size and structure of the substrate during the branching reaction did not considerably affect the patterns of chains produced by the enzymes. Chain length patterns as well as branching rates were different for the two SBE isoforms, supporting the theory that they have different roles in amylopectin synthesis. Despite the differences in chain length profiles, the degree of branching was found to be 3.7% for both SBE products when analyzed by NMR. Using proton 2D-NMR, the structural differences between intact branching products and their β -limit dextrins were determined

AN 2002:649191 HCAPLUS <<LOGINID::20090701>>

DN 137:290790

TI Characterisation of the in vitro products of potato starch branching enzymes I and II

AU Andersson, L.; Andersson, R.; Andersson, R. E.; Rydberg, U.; Larsson, H.; Aman, P.

CS Department of Food Science, Swedish University of Agricultural Sciences, Uppsala, SE-750 07, Swed.

SO Carbohydrate Polymers (2002), 50(3), 249-257

CODEN: CAPOD8; ISSN: 0144-8617

PB Elsevier Science Ltd.

DT Journal

LA English

RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 7 OF 13 HCAPLUS COPYRIGHT 2009 ACS on STN
TI The influence of an increased degree of branching on the physicochemical properties of starch from genetically modified potato
AB Transgenic potatoes were studied which contained starch with an increased degree of branching of the starch as a result of the expression of the glycogen branching enzyme gene (*glgB*) of *Anacystis nidulans* or *Escherichia coli*. These trans-genes were expressed in a normal amylose-containing wild-type and in an amylose-free (*amf*) potato mutant. The degree of branching of these starches had increased up to 25%. This increase in the degree of branching could be partly explained by the presence of 5-15% more short chains in the amylopectin, the socalled A chains. The influence of the altered degree of branching on the physico-chemical properties of the starches was investigated. No change in granule size or morphol. could be observed for the altered starches of these transgenic plants. Regardless of the presence or absence of amylose, starches with an increased degree of branching showed a shift towards more short chains of the amylopectin, a lower peak viscosity and for the amylose-free starch a tendency to form weaker gels. These results show that increasing the degree of branching of amylopectin leads to specific changes in the physico-chemical properties of the starch.
AN 1998:733594 HCAPLUS <>LOGINID::20090701>>
DN 130:78708
TI The influence of an increased degree of branching on the physicochemical properties of starch from genetically modified potato
AU Kortstee, Anne J.; Suurs, Luc C. J. M.; Vermeesch, Angela M. G.; Keetels, Christel J. A. M.; Jacobsen, Evert; Visser, Richard G. F.
CS Graduate School of Experimental Plant Sciences, Department of Plant Breeding, Wageningen Agricultural University (WAU), Wageningen, 6700 AJ, Neth.
SO Carbohydrate Polymers (1998), 37(2), 173-184
CODEN: CAPOD8; ISSN: 0144-8617
PB Elsevier Science Ltd.
DT Journal
LA English
RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 8 OF 13 HCAPLUS COPYRIGHT 2009 ACS on STN
TI Characterization of starch from genetically modified potato after transformation with the bacterial branching enzyme of *Anacystis nidulans*
AB Physicochem. properties of starch from transgenic potato plants were investigated. Plants transformed with a construct carrying a bacterial branching enzyme showed an increased degree of branching of starch. One of the transformants had a lowered amylose content.
AN 1997:613429 HCAPLUS <>LOGINID::20090701>>
DN 127:275392
OREF 127:53717a,53720a
TI Characterization of starch from genetically modified potato after transformation with the bacterial branching enzyme of *Anacystis nidulans*
AU Kortstee, A. J.; Suurs, L. C. J. M.; Vermeesch, A. M. G.; Visser, R. G. F.
CS Graduate School of Experimental Plant Sciences, Department of Plant Breeding, Agricultural University Wageningen, Wageningen, 6700 AJ, Neth.

SO Special Publication - Royal Society of Chemistry (1997), 205(Starch),
238-247
CODEN: SROCD0; ISSN: 0260-6291

PB Royal Society of Chemistry

DT Journal

LA English

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 9 OF 13 HCPLUS COPYRIGHT 2009 ACS on STN

TI Expression of Escherichia coli branching enzyme in
tubers of amylose-free transgenic potato leads to an increased
branching degree of the amylopectin

AB In order to increase the branching degree of potato
tuber starch, the gene encoding branching
enzyme (*glgB*) of *Escherichia coli* was expressed in the
amylose-free potato mutant. The *E. coli* *glgB* was cloned in the
binary vector pBIN19 under the transcriptional control of the potato
Granule Bound Starch Synthase (GBSS) promoter and transit
peptide sequence. The *E. coli* *glgB* was cloned behind the two N-terminal
amino acids of the GBSS mature protein, creating a chimeric protein.
Transgenic plants were obtained which expressed the *E. coli*
branching enzyme as was shown by the presence of mRNA
and protein in the tubers. Correctly processed protein was found both in
the soluble and starch granule bound protein fraction. Anal. of
the starch showed an increase in the branching
degree (DE) of up to 25% more branchpoints. The increase in the
number of branchpoints was due to the presence of more short chains, with a
d.p. (DP) of 16 glucose-residues or less in the amylopectin.
Changes in other characteristics of the starch, such as average
chain length (CL) and λ_{max} , indicated a more branched structure for
starch of transformed plants as well.

AN 1996:502541 HCPLUS <>LOGINID::20090701>

DN 125:163336

OREF 125:30475a,30478a

TI Expression of Escherichia coli branching enzyme in
tubers of amylose-free transgenic potato leads to an increased
branching degree of the amylopectin

AU Kortstee, Anne J.; Vermeesch, Angela M. S.; De Vries, Beja J.; Jacobsen,
Evert; Visser, Richard G. F.

CS Graduate School Experimental Plant Sciences, Agricultural University,
Wageningen, 6700 AJ, Neth.

SO Plant Journal (1996), 10(1), 83-90
CODEN: PLJUED; ISSN: 0960-7412

PB Blackwell

DT Journal

LA English

L8 ANSWER 10 OF 13 HCPLUS COPYRIGHT 2009 ACS on STN

TI Introduction of sense and antisense cDNA for branching
enzyme in the amylose-free potato mutant leads to
physico-chemical changes in the starch

AB One isoform of the branching enzyme (BE; E.C.
2.4.1.18) of potato (*Solanum tuberosum L.*) is known and catalyzes the
formation of α -1,6 bonds in a glucan chain, resulting in the
branched starch component amylopectin. Constructs
containing the antisense- or sense-oriented distal 1.5-kb part of a cDNA for
potato BE were used to transform the amylose-free (amf) mutant
of potato, the starch of which stains red with iodine. The
expression of the endogenous BE gene was inhibited either largely or fully
as judged by the decrease or absence of the BE mRNA and protein. This

resulted in a low percentage of starch granules with a small blue core and large red outer layer. There was no effect on the amylose content, degree of branching or λ_{max} of the iodine-stained starch. However, when the physico-chemical properties of the different starch suspensions were assessed, differences were observed, which although small indicated that starch in the transformants was different from that of the amf mutant.

AN 1996:48388 HCPLUS <<LOGINID::20090701>>
 DN 124:82247
 OREF 124:15321a,15324a
 TI Introduction of sense and antisense cDNA for branching enzyme in the amylose-free potato mutant leads to physico-chemical changes in the starch
 AU Flipse, E.; Suurs, L.; Keetels, C. J. A. M.; Kossmann, J.; Jacobsen, E.; Visser, R. G. F.
 CS Grad. Sch. Experimental Plant Sci., Agric. Univ., Wageningen, 6700 AJ, Neth.
 SO Planta (1996), 198(3), 340-7
 CODEN: PLANAB; ISSN: 0032-0935
 PB Springer
 DT Journal
 LA English

L8 ANSWER 11 OF 13 HCPLUS COPYRIGHT 2009 ACS on STN
 TI Controlling the degree of branching in plant starches by controlling the level of debranching enzyme activity
 AB Methods for controlling the degree of branching of starches and of their amylopectin content by modulating the level of debranching activity in the plant are described. Branching enzyme activity can be lowered by either using antisense expression constructs or by expressing a truncated gene encoding a product that inhibits debranching enzyme activity (no data). The activity can be increased by placing the gene under control of a strong promoter. The purification and characterization of the debranching enzyme of potato are described.

AN 1995:520507 HCPLUS <<LOGINID::20090701>>
 DN 122:261373
 OREF 122:47593a,47596a
 TI Controlling the degree of branching in plant starches by controlling the level of debranching enzyme activity
 IN Kossmann, Jens
 PA Institut fuer Genbiologische Forschung Berlin GmbH, Germany
 SO Ger. Offen., 13 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4327165 CA 2169174 WO 9504826	A1 A1 A1	19950216 19950216 19950216	DE 1993-4327165 CA 1994-2169174 WO 1994-EP2623	19930809 19940808 19940808
	W: AU, CA, HU, JP, KR, RU, UA, US RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	AU 9475352 AU 693469 EP 713531	A B2 A1	19950228 19980702 19960529	AU 1994-75352 EP 1994-925439 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE	19940808 19940808 19940808
	HU 73740 JP 09501052	A2 T	19960930 19970204	HU 1996-285 JP 1994-506224	19940808 19940808

US 6001628 A 19991214 US 1996-596257 19960418
US 6433253 B1 20020813 US 1999-370644 19990806
PRAI DE 1993-4327165 A 19930809
WO 1994-EP2623 W 19940808
US 1996-596257 A3 19960418

L8 ANSWER 12 OF 13 HCPLUS COPYRIGHT 2009 ACS on STN
TI The degree of branching in
(α 1,4)-(α 1,6)-linked glucopolysaccharides is dependent on
intrinsic properties of the branching enzymes
AB Branching enzymes from rat and rabbit liver, as well as from potato and
maize, were prepared. They were almost free from contaminating
glucan-degrading enzymes. In sweet corn maize, 2 sep. fractions with
(α 1,4)glucan-(α 1,4)glucan α 6-glycosyltransferase
activities were obtained. One of them synthesized amylopectin,
the branched component of starch, in the presence of
phosphorylase and glucose 1-phosphate, whereas the other fraction
synthesized phytoglycogen. Furthermore, in a maize variety which does not
accumulate phytoglycogen, only 1 fraction of branching activity was found
which formed amylopectin under the above-mentioned conditions.
Comparative analyses performed with native
(α 1,4)-(α 1,6)glucopolysaccharides, and those synthesized in
vitro, with the branching enzyme from the same tissue,
demonstrated a close similarity between both glucans. It may be concluded
that the branching enzyme is responsible for the
specific degree of (α 1,6) branch linkages found in the native
polysaccharide.
AN 1987:632067 HCPLUS <<LOGINID::20090701>>
DN 107:232067
OREF 107:37211a,37214a
TI The degree of branching in
(α 1,4)-(α 1,6)-linked glucopolysaccharides is dependent on
intrinsic properties of the branching enzymes
AU Tolmasky, Diana Silvia; Krisman, Clara Rebeca
CS Inst. Invest. Bioquim. 'Fund. Campomar', Fac. Cienc. Exactas y Nat.,
Buenos Aires, Argent.
SO European Journal of Biochemistry (1987), 168(2), 393-7
CODEN: EJBCAI; ISSN: 0014-2956
DT Journal
LA English

L8 ANSWER 13 OF 13 HCPLUS COPYRIGHT 2009 ACS on STN
TI Metabolism of the reserve polysaccharide of *Streptococcus mitis*.
Properties of branching enzyme, and its effect on the
activity of glycogen synthetase
AB Branching enzyme (I) (EC 2.4.1.18) isolated from
intracellular exts. of several strains of *S. mitis* increased branching in
maltodextrins, potato amylose (II), and amylopectin
(III). Maltodextrins with an average degree of polymerization >20 were good
substrates for the enzyme, and the rate of I action increased with chain
length. The enzyme had a higher affinity toward branching substrates than
linear polysaccharides, and evidence of its ability to convert glycogen
into a more highly branched product is presented. Glycogen synthetase
synthesizes glycogen. When I is also present the resulting glycogen
contains many more branches; without synthetase, I reorganizes the sugar
substrates into sugars with branches. There was a moderate effect of
citrate (IV) on the I activity in digests containing III; the effect when II
was the substrate was far more extensive, the increase in activity varying
between 4- and 11-fold. Maximum activity on both substrates was found in
0.05M IV. I activity of crude exts. of *S. mitis* increased \geq 2-fold
when IV was added to II and III digests. In the absence of IV, 0.05M

Tris. HCl buffer (pH 7.0) increased I activity in III and II digests by 70 and 35%, resp. In the presence of IV buffer, molybdate ($\leq 2\%$) did not inhibit I activity with either II or III digests; when phosphate replaced IV buffer in these digests, 85 and 100% inhibition was observed with 2% molybdate with the resp. digests. Addition of 0.3-0.5 mM mercuric chloride to digests containing IV completely inhibited enzyme activity. There is a possibility that the IV effect could constitute a mechanism for regulating the degree of branching of *S. mitis* glycogen. For in the absence of IV, glycogen synthetase was fully active, while the ability of I to act on long linear chains decreased. When IV was present, I showed full activity, while 0.04M IV caused 90% inhibition of the synthetase. Thus, in the absence of IV the chains could lengthen (II synthesis), and in the presence of IV the chains would become branched.

AN 1971:458933 HCPLUS <<LOGINID::20090701>>

DN 75:58933

OREF 75:9275a,9278a

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